

AMENDMENTS TO THE CLAIMS

Please cancel claims 32-37 and amend claims 46-53. Claims 1-31 were canceled in a previous paper. No new matter is believed to be introduced by the aforementioned amendments. The following listing of claims will replace all prior versions and listings of claims in the application.

1-37. **(Canceled)**

38. **(Previously Presented)** An optoelectronic device, comprising:

a first mirror;

a second mirror;

one or more heat conduction layers formed between the first mirror and the second mirror, at least one of the heat conduction layers being periodically doped to maximize doping at minima of electric fields in the optoelectronic device;

an active region situated between the first mirror and the second mirror;

an insulating layer positioned in or adjacent to the first mirror, the insulating layer defining an aperture; and

an isolation implant region extending around, and spaced outwardly from, at least part of the aperture of the insulating layer and traversing through the insulating layer and at least part of the first mirror.

39. **(Previously Presented)** An optoelectronic device according to claim 38 wherein the isolation implant region also traverses through the active region.

40. **(Previously Presented)** An optoelectronic device according to claim 39 wherein the isolation implant region traversed through the active region and at least partially into the second mirror.

41. **(Previously Presented)** An optoelectronic device according to claim 38 wherein the isolation implant region extends entirely around the perimeter of the aperture of the insulating layer.

42. **(Previously Presented)** An optoelectronic device according to claim 38 wherein the isolation implant region defines an aperture that is larger than the aperture of the insulating layer.

43. **(Previously Presented)** An optoelectronic device according to claim 42 wherein the aperture of the isolation implant region is substantially coaxial with the aperture of the insulating layer.

44. **(Previously Presented)** An optoelectronic device according to claim 38, wherein the first mirror comprises:

- a first DBR layer that has substantially isotropic conductivity;
- a second DBR layer including the insulating layer, the second DBR layer having a doping level to minimize series resistance and heating effects in the aperture; and
- a third DBR layer formed over the second DBR layer.

45. **(Previously Presented)** An optoelectronic device according to claim 38 wherein the optoelectronic device is a Vertical Cavity Surface Emitting Laser (VCSEL).

46. **(Currently Amended)** A method for forming an optoelectronic device, the method comprising the steps of:

- providing a lower mirror;
- providing an active region above the lower mirror;
- providing a first DBR layer in an upper mirror above the active region, the first DBR layer having a first doping level;
- providing a second DBR layer in the upper mirror, the second DBR layer including an insulating layer that defines an aperture, the second DBR layer further having a second doping level that is higher than the first doping level; ~~[[and]]~~
- providing an isolation implant in an implant region, wherein the implant region extends around, and is spaced outwardly from, at least part of the aperture of the insulating layer and traverses down through at least part of the upper mirror and through the insulating ~~layer~~ layer;
- providing a third DBR layer formed above the second DBR layer; and
- providing one or more conduction layers formed between the lower mirror and the upper mirror, the one or more conduction layers being periodically doped such that heavy doping occurs at nulls of an electric field in the optoelectronic device.

47. **(Currently Amended)** ~~An optoelectronic device~~ A method according to claim 46 wherein the isolation implant region traverses through the active region.

48. **(Currently Amended)** ~~An optoelectronic device~~ A method according to claim 47 wherein the isolation implant region ~~traversed~~ traverses through the active region and at least partially into the lower mirror.

49. **(Currently Amended)** ~~An optoelectronic device~~ A method according to claim 46 wherein the isolation implant region extends entirely around the perimeter of the aperture of the insulating layer.

50. **(Currently Amended)** ~~An optoelectronic device~~ A method according to claim 46 wherein the isolation implant region defines an aperture that is larger than the aperture of the insulating layer.

51. **(Currently Amended)** ~~An optoelectronic device~~ A method according to claim 50 wherein the aperture of the isolation implant region is substantially coaxial with the aperture of the insulating layer.

52. **(Currently Amended)** ~~An optoelectronic device~~ A method according to claim 46 wherein the isolation implant region is implanted with protons.

53. **(Currently Amended)** ~~An optoelectronic device~~ A method according to claim 46 ~~further comprising:~~

~~providing a third DBR layer formed above the second DBR layer; and~~

~~providing one or more conduction layers formed between the lower mirror and the upper mirror, the one or more conduction layers being periodically doped such that heavy doping occurs at nulls of an electric field in the optoelectronic device; wherein the optoelectronic device is a Vertical Cavity Surface Emitting Laser (VCSEL).~~